SVKM's
D. J. Sanghvi College of Engineering

Program: B.Tech in Computer Engineering **Academic Year: 2022** **Duration: 3 hours**
Date: 23.01.2023
Time: 09:00 am to 12:00 pm
Subject: Database Management Systems (Semester III) **Marks: 75**

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover page of the Answer Book, which is provided for their use.

(1) This question paper contains two pages.
(2) All Questions are Compulsory.
(3) All questions carry equal marks.
(4) Answer to each new question is to be started on a fresh page.
(5) Figures in the brackets on the right indicate full marks.
(6) Assume suitable data wherever required, but justify it.
(7) Draw the neat-labelled diagrams, wherever necessary.

Question No.		Max. Marks
Q1 (a)	Draw ER diagram for Library Management System. Describe schema with keys used. **OR** Draw ER diagram for Hospital Management System. Describe schema with keys used.	[10] [10]
Q1 (b)	Compare DBMS and early file systems bringing out the major advantages of the Database approach.	[05]
Q2 (a)	Explain the steps for mapping ER model to relational model with an example.	[10]
Q2 (b)	What are the different types of keys in DBMS? Differentiate between foreign key and primary key. **OR** List various Primary relational algebra operators. Explain any two operators with example.	[05] [05]
Q3 (a)	Write SQL queries for the given database. Assume atleast 4 relevant record in table and show output. Employee(eid, emp-name, street, city) Works(eid, cid, salary) Company(cid, comp-name, city) Manager(eid, manager-name) 1. Find the names of all the employees having 'S' as first letter in their names. 2. Display the annual salary of all the employees. 3. Find the name, street and city of all employees who work for "Accenture" and earn more than 30,000. 4. Give total number of employees.	[10]

	5. Add a new record in employee. **OR** Write SQL queries for the given database. Book (book_id. Title,author,cost) Store(store_no,city,state,inventory_val) Stock(store_no, book_id, quantity) Assume at least 4 relevant record in table and show output. 1. Modify the cost of DBMS books by 10%. 2. Find the author of the books which are available in Mumbai Store. 3. Find the title of the most expensive book. 4. Finad the total quantity of books in each store. 5. Add a new record in book.	[10]
Q3 (b)	Explain types of outer joins with suitable example.	[05]
Q4 (a)	Define Normalization. Explain 1NF, 2NF and 3NF with suitable example. **OR** Describe ACID properties with examples and draw state transition diagram of transaction.	[10] [10]
Q4 (b)	Discuss Timestamp based protocol.	[05]
Q5 (a)	Explain types of integrity constraints with example.	[10]
Q5 (b)	Explain features of Distributed Database. **OR** Explain transparencies in Distributed Database design.	[05] [05]